Remarks/Arguments

In the Office Action dated May 15, 2003, the Examiner: (1) subjected claims 13-45 to a restriction requirement; (2) rejected claims 1-3, 5-7, and 9-11 as obvious over Niyogi et al. (US 6,144,755) in view of Suzuki (US 5,859,921); and (3) objected to claims 4, 8, and 12 as being dependent upon a rejected based claim, but otherwise allowable. In the parent case (09/528,279), Applicants rewrote claims 4, 8, and 12 in independent form and amended claims 3, 7, and 11 to depend from claims 4, 8, and 12, respectively. In the parent case all other claims were cancelled to permit the allowable claims to issue promptly.

With this Preliminary Amendment and continuation, Applicants cancel claims 12-45. Furthermore, Applicants have amended claims 1-5, and 7-9, and added claims 46-57. Applicants respectfully request reconsideration and allowance of the pending claims.

Claim Rejections

A.   Claim 1

The preamble of claim 1 was amended so as not to introduce unnecessary limitations. The Examiner rejected claim 1 as obvious over Niyogi in view of Suzuki. Niyogi teaches a method for determining the pose of a head by comparing an image of a head with multiple stored images. (see col. 2, lines 16-42, col. 3, lines 21-28). Niyogi further teaches a "tree-structure", "mapping" and/or "indexing" procedure that may be used to compare an image to stored "training" images. Specifically, Niyogi teaches that each image is considered to be a vector in n dimensional space, where n is the number of pixels in an image. Therefore, each image is an n-dimensional code. The images are compared by comparing the n-dimensional codes or a simplification of the n-dimensional codes (see col. 2, lines 16-41, col. 3, lines 22-28 and lines 51-67, col. 4, lines 1-19 and lines 59-67, col. 5, lines 1-17). Suzuki teaches an apparatus for

processing an image of a face that detects the eyes of a face. Suzuki further teaches determining a face centroid to help locate the eyes. (see col. 5 lines 42-67, col. 6, lines 1-54).

Amended claim 1 requires "computing a rotation of a face using a single digital image of said face" and "computing a tilt of said face using the single digital image" and "determining a quantitative face direction of said face using the computed rotation and computed tilt of said face". Niyogi does not teach computing a rotation and tilt of a face as required by claim 1. As described above, Niyogi teaches comparing an n-dimensional code describing pixels of an image to a plurality of stored training images and their corresponding n-dimensional codes. Applicants do not understand why Examiner cites Niyogi as teaching "computing a rotation" and "computing a tilt" as required by claim 1 when Niyogi only teaches determining a pose of a head by comparison with other images as previously described. Suzuki also is deficient in this regard.

Furthermore, Niyogi teaches determining the pose of an image by comparing the image to a plurality of stored images (see figs. 2 and 3, col. 2, lines 16-24, col. 3, lines 22-28). Even the Examiner recognizes that Niyogi teaches using a plurality of images and states "determining the pose of an image and direction of the plurality of images, fig. 2 has a set of images at different poses for the use in determining the direction of the head is facing" (see Office Action pg. 6, ¶ 1). As such, Niyogi teaches using multiple images to determine a pose of a head and does not teach "using a single digital image" as required in claim 1. Neither Niyogi nor Suzuki teach or suggest computing a rotation and tilt of a face using a single digital image as required in claim 1. For at least these reasons, Applicants submit that claim 1 and its dependent claims 2-4, and 46-49 should be allowed.

B. Claim 5

The preamble of claim 5 was amended so as not to introduce unnecessary limitations. Amended claim 5 requires, "computing a rotation of a face in a single digital image" and "computing a tilt of said face in said image" and "determining a quantitative face direction...using the computed rotation and computed tilt of said face". As previously explained neither Niyogi nor Suzuki teach or suggest computing a rotation and tilt of a face. For at least these reasons, Applicants submit that independent claim 5 and its dependent claims 6-8, and 50-53 are allowable over the cited art.

C. Claim 9

Applicants amended claim 9 to ensure proper antecedent basis of several claim terms. Amended claim 9 requires "computing a rotation of a face" and "computing a tilt of said face". As previously explained, neither Niyogi nor Suzuki teach or suggest computing a rotation and tilt of a face as required in claim 9. For these reasons, Applicants submit that independent claim 9 and its dependent claims 10-11, and 54-57 should be allowed.

Added Claims

Added claims 46-57 are dependent claims. For the reasons explained previously, claims 46-57 should be allowable over the cited art. Additionally, claims 46-57 contain limitations that Applicants cannot find in the art cited by the Examiner.
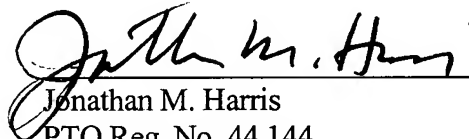
CONCLUSIONS

In the course of the foregoing discussions, Applicants may have at times referred to claim limitations in shorthand fashion, or may have focused on a particular claim element. This discussion should not be interpreted to mean that the other limitations can be ignored or dismissed. The claims must be viewed as a whole, and each limitation of the claims must be considered when determining the patentability of the claims. Moreover, it should be understood that there may be other distinctions between the claims and the prior art which have yet to be raised, but which may be raised in the future.

If any fees or time extensions are inadvertently omitted or if any fees have been overpaid, please appropriately charge or credit those fees to Conley Rose, P.C. Deposit Account Number 03-2769 and enter any time extension(s) necessary to prevent this case from being abandoned.

Applicants respectfully request that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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